

CLAIMS

1. A curable dielectric composition comprising polynorbornene, a polymeric diluent which plasticises the composition, a particulate material and a curing agent for the composition.
2. A curable composition according to claim 1; wherein the polymeric components comprise between 5-50% by weight of the composition, more preferably 15-30 wt% and most preferably 20-25 wt%.
3. A curable composition according to claim 2, wherein of the polymeric components the polynorbornene, is present in an amount of between 70-85% by weight, more preferably between 72-83wt% and most preferably between 75-80wt%.
4. A curable composition according to any one of claims 1 to 3, wherein of the polymeric components the polymeric diluent is present in an amount of between 15-30% by weight, more preferably 17-28 wt% and most preferably 20-25 wt%.
5. A curable composition according to any one of claims 1 to 4, wherein the polymeric diluent is an elastomer.
6. A curable composition according to any one of claims 1 to 5, wherein the polymeric diluent is co-curable with the polynorbornene.
7. A curable composition according to claim 6, wherein the polymeric diluent includes unsaturated alkylene groups.
8. A curable composition according to claim 7, wherein the elastomer is an ethylene propylene diene (EPDM).

9. A curable composition according to claim 8, wherein the diene group of the EPDM is ethylidene norbornene.
10. A curable composition according to any one of claims 1 to 9, wherein the particulate material is present in the composition in an amount of from 50-95% by weight, more preferably from 70-85 wt% and more preferably about 75-80 wt%.
11. A curable composition according to any one of claims 1 to 10, wherein the particle size of the particulate material is from 1-250 µm, with from 60-80µm more preferred and about 70µm being most preferred.
12. A curable composition according to any one of claims 1 to 11, wherein the particulate material is titania, silica, fused silica, strontium titanate and/or a mixture thereof.
13. A curable composition according to any one of claims 1 to 12, wherein the curing agent is a radical initiator.
14. A curable composition according to any one of claims 1 to 13, wherein the curing agent is typically triggered at between 120-200°C.
15. A curable composition according to any one of claims 1 to 14, wherein the curing agent is present in an amount of about 5-10% by weight of the polymer.
16. A curable composition according to any one of claims 1 to 15, wherein the curing agent is a peroxide.
17. A curable composition according to any one of claims 1 to 16, wherein the composition includes at least one auxiliary agent such as a filler, a fire retardant agent and / or a coupling agent and/or a chain extender.

18. A curable composition according to claim 17, incorporating magnesium hydroxide, aluminium hydroxide, phosphorus containing compounds and halogenated compounds as a fire retardant agent.
19. A curable composition in accordance with claim 17 or 18, incorporating chlorosilane and/or aminosilane as a coupling agent.
20. A cured dielectric composition comprising the cured form of a composition in accordance with any one of claims 1 to 19.
21. An electronic circuit board comprising a conductive circuit mounted on a substrate that comprises a cured composition in accordance with claim 20.
22. An electronic circuit board in accordance with claim 21 wherein the conductive circuit comprises copper.
23. A method of manufacturing a cured composition for use as a substrate for an electronic circuit board, the method comprising continuously forming a sheet of a composition as defined in any one of claims 1 to 19 and effecting curing of said composition.
24. A method of forming an electronic circuit comprising producing an assembly which comprises the cured form of a composition as claimed in any one of claims 1 to 19 provided with a layer of metal on at least one surface and forming said layer or layers into a circuit.
25. A method as claimed in claim 24 wherein the assembly is produced by: -
  - (a) forming the uncured composition into a sheet;
  - (b) applying a metal layer to at least one surface of the sheet; and
  - (c) effecting curing of the composition.
26. A method as claimed in claim 24 wherein the assembly is produced by: -

- (a) forming the uncured composition into a sheet;
- (b) effecting curing of the composition.
- (c) applying a copper layer to the cured sheet by the use of methods such as bonding films and vapour deposition.